REMARKS

Claims 17-31 are pending in the present application, and claim 17 is in independent form. These claims stand rejected under 35 U.S.C. § 103(a) as being obvious in view of the combination of Livermore[1] and Kringelum[2]. In view of the remarks below, Applicants respectfully request reconsideration and withdrawal of this rejection.

Claim 17 is directed to a composition comprising granules suitable for use in the preparation of a dough. The granules have an average diameter in the range of 30-500 μm. They comprise a hydrophilic core with a diameter of at least 5 μm, a lipophilic substantially continuous layer encapsulating the core, and one or more bakery ingredients in particulate form. The core contains one or more functional bakery ingredients selected from the group of enzymes, acidulants and hydrocolloids. The layer contains 50-98 wt.% triglyceride fat with a slip melting point of at least 30°C and 2-50 wt.% of a release agent. The release agent is selected from the group of monoglycerides, diglycerides, diacetyl tartaric acid ester of mono- and/or diglyceride, stearyl-lactylates and combinations thereof. The bakery ingredient(s) is selected from the group consisting of redox agents, emulsifiers, hydrocolloids, flour, salts, malt flour, malt extract, gluten and starch.

Kringelum is directed to an edible composition comprising a food additive component in the form of particles encapsulated by an encapsulation structure.[3] The purpose of Kringelum's encapsulation is to defer enzymatic activity of the food activity until the bulking process is instructed to avoid the undesirable development in the dough of "stickiness."[4] However, it does not teach that the encapsulating layer contains 50-98 wt% triglyceride fat and 2-50 wt% of a release agent. Kringelum's encapsulation structure comprises an edible fatty component. The edible fatty component comprises a hydrophilic substance that does not provide

[1] WO 98/32336 to Livermore.

[2] WO 99/08553 to Kringelum.

[3] Kringelum at page 2, line 25 to page 3, line 10.

[4] Kringelum at page 11, lines 5-9.

an encapsulation. Instead, it improves the characteristics of the encapsulation.[5] Examples of hydrophilic substances mentioned by Kringelum include glycerol, polyglycerols, polysorbates (e.g. polyoxyethylene sorbitan esters of edible fatty acids).[6]

Kringelum's "food additive" includes the following groups of additives: antioxidants, sweeteners, flavourings, colours, preservatives, enzymes, nutritive additives (vitamins and minerals), emulsifiers, pH control agents (acidulants, hydrocolloids, antifoams and release agents), flour improving or strengthening agents, raising or leavening agents, gases and chelating agents.[7]

Kringelum, however, does not teach a granulate that comprises an encapsulating layer containing 50-98 wt.% triglyceride fat and 2-50 wt.% of a release agent selected from the group of monoglycerides, diglycerides, diacetyl tartaric acid ester of mono- and/or diglyceride, stearyl-lactylates and combinations thereof.

Livermore teaches a bread improver comprising a latent enzyme preparation which is active during or after proving, but relatively inactive during mixing.[8] This latency may be achieved several ways, one of them being encapsulation.[9] Livermore discloses embodiments where the enzyme is encapsulated, wherein the encapsulate is selected from the group consisting of: fat, gelatin, gum (vegetable gum), maltodextrin, starch (e.g. modified starch), emulsifiers, waxes and sugars.[10] In Livermore's preferred embodiments, the enzyme is released during or after proving by temperature mediated release, water-mediated release or attritional agent (e.g. an enzyme, surfactant or acidulant).[11]

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[5] Kringelum at page 2, line 25 to page 3, line 10.

[6] Kringelum at page 13, lines 23-27.

[7] Kringelum at page 4, lines 19-28.

[8] Livermore at page 2, lines 33-34.

[9] Livermore at page 2, lines 36-38.

[10] Livermore at page 5, lines 27-29.

[11] Livermore at page 6, lines 28-30.

Livermore's Example 1 describes the preparation of a granulate by coating an α-amylase agglomerate (having an average particle size of around 150 microns) with a fat having a slip melting point of about 35°C.[12]

Livermore states that the attritional agent breaks down a barrier between the enzyme and the dough to release the enzyme, and that the attritional agent is an inherent property of the dough during or after proving.[13] Where the encapsulant is fat, the attritional agent is primarily the temperature differential between the mixing and post-mixing steps; the relatively high temperatures at the proving state effectively melt the fat capsule and release the enzyme.[14]

Therefore, Livermore teaches that in the case of fat, the temperature differential between the mixing and post-mixing steps is the primary attritional agent. Livermore does not suggest that an emulsifier can be used as an attritional agent for a fat coated enzyme preparation, nor does it suggest incorporating such an emulsifier in the encapsulant, let alone at a concentration of 2-50% wt.% of encapsulant.

Livermore also fails to teach an encapsulating layer containing 50-98 wt.% triglyceride and 2-50 wt.% of a release agent selected from the group of monoglycerides, diglycerides, diacetyl tartaric acid ester of mono- and/or diglyceride, stearyl-lactylates and combinations thereof.

Point I. The combination of Livermore and Kringelum does not teach or suggest each and every element recited in the claims.

When making a rejection under 35 U.S.C. § 103, the Examiner has the burden of establishing a *prima facie* case of obviousness. *In re Fritch*, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992). To establish this, each and every claimed element must be taught or made obvious by the applied references. *Ex parte Hellums*, Application No. 09/103,704, Appeal No. 2001-2694, 2003 WL 25281923 at *4 (BPAI Jul. 15, 2003); *Ex parte Likins*, Application No.

[12] Livermore at page 7, line 36 to page 5, line 15.

[13] Livermore at page 6, lines 32-36.

[14] Livermore at page 6, lines 32-36.

10/010,392, Appeal No. 2004-0760, 2004 WL 4981756 at *3 (BPAI Apr. 8, 2004).

Here, the cited references do not teach each and every element recited in the claims. Claim 17 recites "a lipophilic substantially continuous layer encapsulating the core, which layer contains 50-98 wt.% triglyceride fat with a slip melting point of at least 30°C and 2-50 wt.% of a release agent selected from the group of monoglycerides, diglycerides, diacetyl tartaric acid ester of mono- and/or diglyceride, stearyl-lactylates and combinations thereof." Kringelum only discloses using an edible fatty component (monoglycerides, diglycerides, triglycerides and mixtures thereof, organic acid esters of mono and diglycerides, lecithins, sucrose esters of fatty acids, polyglycerol esters of fatty acids, sodium or calcium stearyl lactylate, sorbitan esters of fatty acids, and propylene glycol esters of fatty acids),[15] but does not teach or suggest the recited encapsulate.

Livermore only discloses encapsulates made from fat, gelatin, gum, maltodextrin, starch, emulsifiers, waxes and sugars.[16] In examples 1-5, Livermore describes coating an α-amylase agglomerate with a fat having a slip melting point of about 35°C.[17] Where the encapsulant is fat, the attritional agent is primarily the temperature differential between the mixing and post-mixing steps; the relatively high temperatures at the proving state effectively melt the fat capsule and release the enzyme.[18] In its examples, Livermore teaches using a vegetable fat of non-lauric origin as an encapsulate. Vegetable fats are triglycerides. Therefore, Livermore does not teach the recited lipophilic substantially continuous layer.

For these reasons, neither Livermore nor Kringelum teaches or suggests the recited lipophilic substantially continuous layer. Without such a teaching, one would have no reason to use the encapsulate recited in claim 17, and therefore, a *prima facie* case of obviousness has not been established.

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[15] Kringelum at page 12, lines 12-34.

[16] Livermore at page 5, lines 27-29.

[17] Livermore at page 7, line 36 to page 9, line 11.

[18] Livermore at page 6, lines 32-36.

Point II. Both Kringelum and Livermore teach away from encapsulates that release a functional bakery ingredient during the dough preparation process.

Furthermore, both Kringelum and Livermore teach that the enzyme is released during or after proving, whereas the recited invention has a slip melting point of at least 30°C, and would release the enzyme during mixing.

MPEP § 2141.02 states

> A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984) (Claims were directed to a process of producing a porous article by expanding shaped, unsintered, highly crystalline poly(tetrafluoroethylene) (PTFE) by stretching said PTFE at a 10% per second rate to more than five times the original length. The prior art teachings with regard to unsintered PTFE indicated the material does not respond to conventional plastics processing, and the material should be stretched slowly. A reference teaching rapid stretching of conventional plastic polypropylene with reduced crystallinity combined with a reference teaching stretching unsintered PTFE would not suggest rapid stretching of highly crystalline PTFE, in light of the disclosures in the art that teach away from the invention, i.e., that the conventional polypropylene should have reduced crystallinity before stretching, and that PTFE should be stretched slowly.).

Like the reference cited in *W.L. Gore*, both references cited in this application teach away from the invention. Both references are directed to avoiding the release of encapsulated bakery ingredients during mixing. Livermore states that "the latent enzyme preparation may be active during or after proving but relatively inactive during mixing."[19] It states that "the inventors have therefore found that the problems associated with stickiness, low water holding capacity and softness at the mixing stage can be avoided if the improver enzymes are mixed in the dough in a latent state and activated during or after the proving stage.[20]

Furthermore, Kringelum states that "one specific example of the advantageous effects of the composition according to the invention is a composition comprising an encapsulate

[19] Livermore at page 2, lines 33-34.

[20] Livermore at page 2, lines 21-24.

antifungal compound .... It has surprisingly been found that such an antimicrobial agent, when added to a dough in the form of particles encapsulated with a fatty substance which melt during baking, has a higher antimicrobial effect as compared to the same amount of the agent which is added as the nonencapsulated salt."[21] "Thus, a further example of application of a composition according to the invention is to provide or control enzymatic activities in a food system ..., whereby one or more of the enzymes, its substrate and possibly co-factors or enzyme inhibitors are incorporated in encapsulated form into the composition whereby the enzymatic activity is not initiated or possibly inhibited until the encapsulation is degraded during processing of the food system. Examples of such enzymatic activities may be ... enzymes which have a starch degrading or a hemicelluslose degrading activity in a dough but for which it is ***desired to defer the effect until during the baking process***. However, when such enzymes are allowed to be active during the process of preparing the dough their activity may result in an undesirable development in the dough.... ***Accordingly, it is advantageous to defer the enzymatic activity until the dough has been prepared, i.e. until the baking process is initiated***. Evidently, the present invention provides the means of such a deferred or controlled release ...."[22]

Thus, both of the cited references teach releasing the enzyme during the baking process, whereas the recited invention is directed to an encapsulate that would be released during the mixing process. Moreover, both references are expressly directed to avoiding "stickiness" of dough caused by releasing enzymes during the mixing process. Therefore, they teach away from the recited invention.

Point III. The advantages provided by the recited granules of the present invention were unexpected.

The invention's rapid release of the functional bakery ingredient during the dough preparation process is surprising because, as shown by the cited references, one would have expected a functional bakery ingredient encapsulated in 100% triglyceride fat to be released during baking, and there is no reason to have expected that the recited mixture of triglyceride fat

[21] Kringelum at page 8, lines 4-29.

[22] Kringelum at page 10, line 23 to page 11, line 9 (emphasis added).

and release agent would release the functional bakery ingredient any earlier. This rapid release in baked bread, for example, provides for a less dry, less stiff and more voluminous bread, as demonstrated by the Examples in the Specification for the above-captioned application. Thus, even assuming that one would have been motivated to create the recited invention, he/she would not have expected the observed outcome in view of the teachings by Livermore and Kringelum. Thus, without evidence to the contrary, assuming that a *prima facie* case of obviousness has been established (which the Applicants expressly deny), these unexpected results rebut the rejection.

CONCLUSION

For the above reasons, Applicants expressly request reconsideration and withdrawal of the asserted rejections, and allowance of pending claims 17-31.

Respectfully submitted,

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